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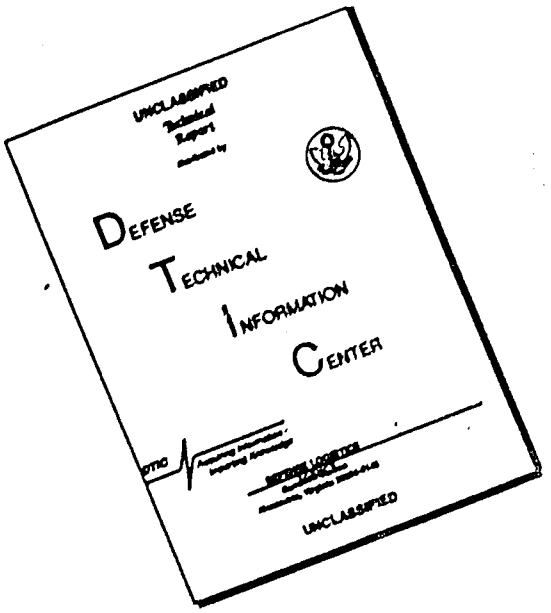

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CONVAIR ASTRONAUTICS

CONVAIR DIVISION OF GENERAL DYNAMICS CORPORATION

VALIDATION PROCEDURE FOR THE FUEL TANKING CONTROL SYSTEM (ELECTRICAL)

"D" SERIES R & D

SYCAMORE S-2

AZN-27-042

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GROUP LAUNCHING CONTROLS DESIGN

REVISIONS

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TABLE OF CONTENTS

SECTION I

INTRODUCTION

This manual provides instructions for validating the Fuel Tanking Control System (Electrical) "D" Series R & D at Sycamore S-2. These instructions are applicable to the system as designed on the date of publication. Design changes may be required during, or after, system installation at the site. If changes are made which affect these instructions, this manual will also be revised.

The only permissible deviations to the procedures outlined in this document are those dictated by site installation difficulties. Such deviations shall be considered interim and must be forwarded to the Launching Controls Design Group for information and concurrence. Approved deviations will be automatically included in the next manual revision.

The test data sheet contained in this manual is a sample copy only and is not intended for actual test recording purposes. Separate copies of the test data sheet are furnished only to those departments whose activities require test data recording. These additional test data sheets are distributed under an identical cover sheet to the one on this manual except for the additional notation of "Test Data Sheet Only". Comparison of this special cover sheet with the one on the procedure correlates the two documents.

Personnel concerned with the use of this validation procedure can contribute to the effectiveness of any revisions by forwarding comments and suggestions to the Launching Controls Design Group, Building 4, Column G2, Montgomery Site, Convair Astronautics.

NOTICE

This document is intended for use as an acceptance validation procedure only. When this control system has been accepted (inspected, bought-off, sold, validated, etc.) no further requirement should exist for this document other than for reference purposes only. Continued checking of accepted systems occurs during the performance of Field Test Procedures, Countdowns, Composite System Checkouts, or Testing and Operating Procedures published by Groups having over-all system responsibility.

SECTION II

REQUIREMENTS

2-1 REFERENCE DRAWINGS

27-69177 Diagram-Schematic, Control, Fuel Tanking, S-2, "D" Series.
27-69018 Wiring-Diagram, Fuel Tanking Control System, "D" Series.
27-6901. Panel-Control, Fuel Tanking, "D" Series.
27-69007 Console Assembly, Fuel Tanking, "D" Series.
27-69119 Diagram-Wiring, Console Assembly, Fuel Tanking, "D" Series.
27-69173 Control Unit - Electrical, Purge System, "D" Series.
7-68371 Cabinet - Amplifier Rack.
7-43022 Propellant Loading Control Unit.

2-2 EQUIPMENT REQUIREMENTS

Fuel Tanking Control Console (Blockhouse)

Missile Ground Rectifier (controlled by Facilities Power Control System)

Missile Simulator Trailer

Control Assy., Propellant Loading

2-3 TEST EQUIPMENT

3 Multimeters

Jumper Wires

A potentiometer set for 28 ohms and rated for 30 watts. (Simulates electrical solenoid loads).

2-4 OPERATING REQUIREMENTS

28 volts dc supplied by the Missile Ground Rectifier.

SECTION III

VALIDATION PROCEDURE

3-1 PURPOSE

This procedure determines that the electrical control equipment and circuitry of the Fuel Tanking Control System is functioning correctly and properly connected.

3-2 PREPARATION

The following system preparations must be accomplished before validation begins.

1. In the Launcher Area:

   Disconnect plug P110 - this disconnects the Purge Local Control Box.

   Disconnect plug P700 - this disconnects the Fuel Flow Totalizer.

   Disconnect plug P800 - this disconnects the Acoustica Control Unit.

2. In the Fuel Storage Area:

   Disconnect plug P101 - this disconnects the Fuel Transfer Unit.

3. In the Transfer Room:

   Disconnect plugs P103, and P105, - this disconnects the Purge Control Unit.

   Disconnect plug P102 at the Propellant Loading Control Unit.

4. In the Blockhouse:

   Disconnect and tag the wires from the following terminals; 1, 19, 44, 45, 62, 6, and 84 of TB5, 2 of TB6 and 97 of TB7.

   At the Contractors Control Panel disconnect and tag the wires to the Vent - Pressurization Valve Solenoids and Control Switches. (Terminals CF18, CF17, CF20, CF10, CF11, and CF12.

   At the Tactical Switch Panel disconnect and tag the wires to the Pump FA and Pump FB Motor Starters. (Terminals CF4, CF3, CF2, CF7, CF8, and CF9).

5. Check that all panel control switches are in the off, closed, hold or normal positions.

3-3 PROCEDURE

The two columns below, Operation and Observation, show the actions to be performed and the results that should be observed during validation of the electrical control system.

	OPERATION	OBSERVATION
1.0	Connect a d-c voltmeter across terminals 1(+) and 5(-) of TB5. (Remove meter after checking observation).	(a) Meter indicates zero volts.
2.0	Connect an ohmmeter between terminals 1 and 5 of TB5. (Maintain this connection through step 2.5).	(a) Meter indicates an open circuit.
2.1	Throw the PANEL POWER switch to the on position.	(a) Meter indicates circuit continuity.
2.2	Remove the PANEL POWER indicator lamps.	(a) Meter indicates approximately 50 ohms.
2.3	Throw the MISSILE FILL & DRAIN switch to the open position.	(a) Meter indicates approximately 50 ohms.
2.4	Throw the GROUND FILL & DRAIN switches to the open position. (Remove the meter (step 2.0) after checking observation).	(a) Meter indicates approximately 50 ohms.
2.5	Connect an ohmmeter between terminals 5 and 21 of TB5. (Maintain this connection through step 2.13).	(a) Meter indicates an open circuit.
2.6	Throw the PUMP INLET switch to the open position.	(a) Meter indicates an open circuit.

OPERATION	OBSERVATION
2.7 Turn the PUMP FB RUN selector switch to MAIN.	(a) Meter indicates an open circuit.
2.8 Turn the PUMP FB RUN selector switch to RESTRICTED.	(a) Meter indicates an open circuit.
2.9 Throw the PUMP OUTLET switch to the open position.	(a) Meter indicates an open circuit.
2.10 Throw the GRAVITY RETURN switch to the open position.	(a) Meter indicates an open circuit.
2.11 Throw the PUMP RETURN switch to the open position.	(a) Meter indicates an open circuit.
2.12. Throw the BLEED VALVE switch to the open position. (Remove meter (step 2.6) after checking observation).	(a) Meter indicates an open circuit.

NOTE

Return all switches to their off, closed, hold, or normal positions. Replace the PANEL POWER indicator lamp. Reconnect wires to terminal 1 of TB5.

3.0 Press-to-test all lights on the control panel.	(a) Each light comes on when pressed and goes off when released.
4.0 At the Contractors Control Panel apply +28 volts dc to terminal CF18 and connect a d-c voltmeter between ground and the following terminals:	(a) Meters indicate: (1) 28 volts dc. (2) zero volts.

Meter	Terminals
(1)	CF17
(2)	CF20

	OPERATION		OBSERVATION
4.1	Throw the PANEL POWER switch to the on position.	(a)	PANEL POWER light (green) comes on.
		(b)	Meters indicate: (1) zero volts. (2) 28 volts ac.
4.2	Throw the PRESSURIZE-VENT switch to VENT. (Return to hold position).	(a)	Meters indicate: (1) zero volts. (2) zero volts. (28 volts dc).
4.3	Press the EMERGENCY button and release.	(a)	EMERGENCY light (red) comes on.
		(b)	Meters indicate: (1) zero volts. (2) zero volts.
4.4	Press the EMERGENCY-RESET button and release.	(a)	EMERGENCY light (red) goes off.
4.5	Remove the +28 volts dc applied to terminal CF18 and the meters connected in step 4.0.	(a)	No indication.
4.6	At the Contractors Control Panel apply +28 volts dc to terminal CF10 and connect a d-c voltmeter between ground and the following terminals: Meter Terminals (1) CF11 (2) CF12	(a)	Meters indicate: (1) zero volts. (2) zero volts.
4.7	Throw the PRESSURIZE-VENT switch to PRESSURIZE. (Return to the hold position).	(a)	Meters indicate: (1) zero volts. (2) 28 volts dc. (Zero volts).

OPERATION	OBSERVATION
4.8 Throw the PANEL POWER switch to the off position.	(a) PANEL POWER light (green) goes off. (b) Meters indicate: (1) 28 volts dc. (2) Zero volts.
4.9 Throw the PRESSURIZE - VENT switch to PRESSURIZE. (Return to the hold position).	(a) Meters indicate: (1) 28 volts dc. (2) Zero volts.
4.10 Throw the PANEL POWER switch to the on position.	(a) PANEL POWER light (green) comes on. (b) Meters indicate: (1) Zero volts. (2) Zero volts.
4.11 Press the EMERGENCY button and release.	(a) EMERGENCY light (red) comes on. (b) Meters indicate: (1) Zero volts. (2) Zero volts.
4.12 Press the EMERGENCY-RESET button and release.	(a) EMERGENCY light (red) goes off. (b) Meters indicate: (1) Zero volts. (2) Zero volts.
4.13 Remove the +28 volts dc applied to terminal CF10 and the meters connected in step 4.6.	(a) No indication.
5.0 Insert key in TEST POSITION switch and turn to the on position.	(a) TEST POSITION light (red) comes on.

OPERATION	OBSERVATION
5.1 Throw the OPERATIONAL POWER switch to the on position.	(a) OPERATIONAL POWER light (green) comes on.
5.2 Install a jumper between terminals 1 and 6 of TB5. (Remove jumper after step 18.8).	(a) PRESSURIZATION SEQUENCE 1 light (green) comes on. (b) OPERATIONAL POWER light (green) goes off.
5.3 Reconnect wires to terminal 19 of TB5 and install a jumper between pins l and k of P101. (Remove jumper after step 13.8).	(a) TU CONTROL PRESSURE light (green) comes on. (b) OPERATIONAL POWER light (green) comes on.
5.4 Turn key in the TEST POSITION switch to the off position.	(a) TEST POSITION light (red) goes off.
6.0 Install a jumper between pin A and C of P800. (Remove jumper after step 6.2).	(a) FUEL AT MISSILE light (green) comes on.
6.1 Momentarily connect a jumper between pins C and A of P700. Repeat several times.	(a) FUEL IN MISSILE GALLONS counter adds one for each momentary contact.
6.2 Momentarily connect a jumper between pins C and B of P700. Repeat until counter reaches zero.	(a) FUEL IN MISSILE GALLONS counter subtracts on for each momentary contact.

NOTE

In the following steps it is assumed that the fuel storage tank is available and that its pressure can be varied from 0 to 30 psi. If the storage tank is not available, substitute a suitable pressure signalling source that is also variable over the same range of psi.

OPERATION		OBSERVATION	
	NOTE (con't)		
	A fuel storage tank recorder also may or may not be available. If one is connected to terminal 6 of the Pressure Calibrating Panel (Z122 - located in the base cabinet of the Fuel Tanking Console), it must be disconnected, mechanically set to zero, then reconnected to terminal 6. If a recorder is not connected in the system, jumper terminals 4 and 3 together.		
7.0	Adjust the fuel storage tank pressure, or substitute pressure source to zero psi.	(a)	Check gauge at pressure source.
7.1	Throw the RUN-CALIB switch of the Pressure Calibrating Panel to RUN.	(a)	Disregard any panel indication.
7.2	Adjust the ZERO ADJ control of the Pressure Calibrating Panel, as required while observing for the correct meter indication. (Lock control after adjustment).	(a)	Read zero pressure on the STORAGE TANK PRESSURE meter of the Fuel Tanking Control Panel.
7.3	Adjust the fuel storage tank pressure, or substitute pressure source to 30 psi. (Do not exceed 30 psi).	(a)	Check gauge at pressure source.
7.4	Adjust the F. S. ADJ control of the Pressure Calibrating Panel as required while observing for the correct meter indication. (Lock control after adjustment).	(a)	Read 30 psi on the STORAGE TANK PRESSURE meter of the Fuel Tanking Control Panel.
7.5	Throw the RUN-CALIB switch of the Pressure Calibrating Panel to CALIB.	(a)	Disregard any panel indication.
7.6	Adjust the CALIB STD control of the Pressure Calibrating Panel as required while observing for the correct meter indication.	(a)	Read 8 psi on the STORAGE TANK PRESSURE meter of the Fuel Tanking Control Panel.

	OPERATION	OBSERVATION
7.7	Throw the RUN-CALIB switch of the Pressure Calibrating Panel to RUN.	(a) Read 30 psi on the STORAGE TANK PRESSURE meter of the Fuel Tanking Control Panel.

NOTE

The above steps 7.0 through 7.7 are outlined as an initial calibrating procedure. Once controls have been set (locked), normal calibration check can be accomplished by throwing the RUN-CALIB switch to CALIB and adjusting the FS ADJ control for 8 psi (lock control) and return switch to RUN position. The CALIB STD locked position must not be changed unless full scale pressure of the system is being changed.

8.0	Connect a 28 ohm potentiometer between pins O and X of P101. (Maintain this connection through step 8.2).	(a) No panel indication.
8.1	Connect a d-c voltmeter across pins O(+) and X(-) of P101. (Maintain this connection during the following step).	(a) Meter indicates 26 volts dc (min.)
8.2	Throw the PUMP INLET switch to the open position. (Return switch to close position after checking observation).	(a) Meter indicates zero volts.
8.3	Install a jumper between pins k and E of P101. (Remove jumper after checking observation).	(a) PUMP INLET OPEN FR-3 light (green) comes on. (Light goes off.
8.4	Install a jumper between pins D and k of P101. (Remove jumper after checking observation).	(a) PUMP INLET CLOSE FR-3 light (amber) comes on. (Light goes off).

	OPERATION	OBSERVATION
9.0	Connect a 28 ohm potentiometer between pins N and X of P101. (Maintain this connection through step 9.2).	(a) No panel indication.
9.1	Connect a d-c voltmeter across pins N(+) and X(-) of P101. (Maintain this connection during the following step).	(a) Meter indicates zero volts.
9.2	Turn the PUMP FB RUN selector switch to MAIN. (Return switch to normal position after checking observation).	(a) Meter indicates 26 volts dc. (Min.)
9.3	Install a jumper between pins k and g of P101. (Remove jumper after checking observation).	(a) PUMP FB MAIN light (green) comes on. (Light goes off).
9.4	Install a jumper between pins k and I of P101. (Remove jumper after checking observation).	(a) PUMP FB MAIN CLOSED light (amber) comes on. (Light goes off).
10.0	Connect a 28 ohm potentiometer between pins K and X of P101. (Maintain this connection through step 10.2).	(a) No panel indication.
10.1	Connect a d-c voltmeter across pins K(+) and X(-) of P101. (Maintain this connection during the following step.)	(a) Meter indicates zero volts.
10.2	Turn the PUMP FB RUN selector switch to RESTRICTED. (Return switch to normal position after checking observation).	(a) Meter indicates 26 volts dc (min.)
10.3	Install a jumper between pins k and J of P101. (Remove jumper after observing indication).	(a) PUMP FB RESTRICTED light (green) comes on. (Light goes off).

OPERATION		OBSERVATION	
10.4	Install a jumper between pins k and L of P101. (Remove jumper after checking observation).	(a)	PUMP FB RESTRICTED CLOSE light (amber) comes on. (Light goes off).
11.0	Connect a 28 ohm potentiometer across pins H and X of P101. (Maintain this connection through step 11.2).	(a)	No panel indication.
11.1	Connect a d-c voltmeter across pins H(+) and X(-) of P101. (Maintain this connection during the following step).	(a)	Meter indicates zero volts.
11.2	Throw the PUMP OUTLET switch to the open position. (Return switch to close position after checking observation).	(a)	Meter indicates 26 volts dc (min).
11.3	Install a jumper between pins K and N of P101. (Remove jumper after checking observation).	(a)	PUMP OUTLET OPEN FR 4 (green) light comes on. (Light goes off).
11.4	Install a jumper between pins k and P of P101. (Remove jumper after checking observation).	(a)	PUMP OUTLET CLOSE FR 4 (red) light comes on. (Light goes off).
12.0	Connect a 28 ohm potentiometer between pins F and X of P101. (Maintain this connection through step 12.2).	(a)	No panel indication.
12.1	Connect a d-c voltmeter across pins F(+) and X(-) of P101. (Maintain this connection during the following step).	(a)	Meter indicates 26 volts dc (min.)
12.2	Throw the GRAVITY RETURN switch to the open position. (Return switch to close position after checking observation).	(a)	Meter indicates zero volts.

	OPERATION		OBSERVATION
12.3	Install a jumper between pins k and e of P101. (Remove jumper after checking observation).	(a)	GRAVITY RETURN OPEN FR 2 light (green) comes on. (Light goes off.)
12.4	Install a jumper between pins k and f of P101. (Remove jumper after checking observation).	(a)	GRAVITY RETURN CLOSE FR 2 light (amber) comes on. (Light goes off).
13.0	Connect a 28 ohm potentiometer between pin k and X of P101. (Maintain this connection through step 13.2).	(a)	No panel indication.
13.1	Connect a d-c voltmeter across pins R(+) and X(-) of P101. (Maintain this connection during the following step).	(a)	Meter indicates zero volts.
13.2	Throw the PUMP RETURN switch to the open position. (Return switch to close position after checking observation).	(a)	Meter indicates 26 volts dc (min.)
13.3	Install a jumper between pins k and A of P101. (Remove jumper after checking observation).	(a)	PUMP RETURN OPEN FR 1 light (green) comes on. (Light goes off).
13.4	Install a jumper between pins k and B of P101. (Remove jumper after checking observation).	(a)	PUMP RETURN CLOSE FR 1 light (amber) comes on. (Light goes off).
14.0	Connect a 28 ohm potentiometer between pins C and X of P101. (Maintain this connection through step 14.2).	(a)	No panel indication.
14.1	Connect a d-c voltmeter across pins C(+) and X(-) of P101. (Maintain this connection during the following step).	(a)	Meter indicates zero volts.

OPERATION	OBSERVATION
14.2 Throw the BLEED VALVE switch to the open position. (Return switch to the close position after checking observation).	(a) Meter indicates 26 volts dc (min).
14.3 Install a jumper between pins k and Q of P101. (Remove jumper after checking observation).	(a) BLEED VALVE OPEN FD 1 light (green) comes on. (Light goes off).
14.4 Install a jumper between pins k and T of P101. (Remove jumper after checking observation).	(a) BLEED VALVE CLOSE FD 1 light (amber) comes on. (Light goes off).
15.0 Apply +28 volts dc to terminal 44 of TB5.	(a) No indication.
15.1 At the Contractors Control Panel connect a d-c voltmeter between ground and the following terminals: Meter Terminals (1) CF2 (2) CF3	(a) Meters indicate: (1) 28 volts dc. (2) Zero volts.
15.2 Press the PUMP FA RUN-START button. (Release)	(a) Meters indicate: (1) 28 volts dc. (2) 28 volts dc. (zero volts).
15.3 Throw the OPERATIONAL POWER switch to the off position. (Return to the on position).	(a) OPERATIONAL POWER light (green) goes off. (Light comes on). (b) Meters indicate: (1) Zero volts. (28 volts dc). (2) Zero volts.

	OPERATION		OBSERVATION
15.4	Press the PUMP FA RUN-STOP button. (Release).	(a)	Meters indicate: (1) Zero volts. (28 volts dc). (2) Zero volts.
15.5	Remove the +28 volts dc applied to terminal 44 of TB5 (step 15.0) and the dc voltmeters (step 15.1).	(a)	No indication.
15.6	Apply +28 volts dc to terminal 45 of TB5.	(a)	No indication.
15.7	Repeat steps 15.1 through 15.4 except use terminal CF7 for meter (1), and terminal CF8 for meter (2), and PUMP FB RUN controls.	(a)	Meter indications will be identical.
15.8	Remove the +28 volts applied to terminal 45 of TB5 and the dc voltmeters (step 15.7).	(a)	No indication.
15.9	Apply +28 volts dc to terminal CF4. (Remove the voltage).	(a)	PUMP FA RUN light (green) comes on. (Light goes off).
15.10	Apply +28 volts dc to terminal CF9. (Remove the voltage).	(a)	PUMP FB RUN light (green) comes on. (Light goes off.)
16.0	Connect a d-c voltmeter across terminal 62 of TB5 and a negative (-)28 volt bus. (Maintain this connection during the following step).	(a)	Meter indicates zero volts.
16.1	Throw the TANK FILLED switch to the on position.	(a)	Meter indicates 28 volts dc.
		(b)	TANK FILLED light (green) comes on.

	OPERATION	OBSERVATION
16.2	Connect a d-c voltmeter across pin d of P103 and a negative (-)28 volt bus. (Maintain this connection through step 17.0).	(a) Meter indicates zero volts.
16.3	Throw the MISSILE FILL & DRAIN switch to the open position.	(a) Meter indicates zero volts.
16.4	Connect a d-c voltmeter across pin k of P103 and a negative (-)28 volt bus. (Maintain this connection through step 17.0).	(a) Meter indicates zero volts.
16.5	Throw the GROUND FILL & DRAIN switch to the open position.	(a) Meter (step 16.4) indicates zero volts.
16.6	Throw the TANK FILLED switch to the off position.	(a) TANK FILLED light goes off. (b) Meters (steps 16.2 and 16.4) indicate 28 volts dc.
16.7	Throw the MISSILE FILL & DRAIN switch to the close position.	(a) Meter (step 16.2) indicates zero volts.
16.8	Throw the GROUND FILL & DRAIN switch to the close position.	(a) Meter (step 16.4) indicates zero volts.
16.9	Apply +28 volts dc to pin I of P105. (Remove voltage after checking observation).	(a) MISSILE FILL & DRAIN OPEN light (green) comes on. (Light goes off).
16.10	Apply (+)28 volts dc to pin J of P105. (Remove voltage after checking observation).	(a) MISSILE FILL & DRAIN CLOSE light (amber) comes on. (Light goes off).
16.11	Apply (+)28 volts dc to pin N of P105. (Remove voltage after checking observation).	(a) GROUND FILL & DRAIN OPEN light (green) comes on. (Light goes off).
16.12	Apply +28 volts dc to pin O of P105. (Remove voltage after checking observation).	(a) GROUND FILL & DRAIN CLOSE light (amber) comes on. (Light goes off).

	OPERATION	OBSERVATION
17.0	Press the EMERGENCY button. (Remove meters (steps 16.2 and 16.4) After checking observation.	(a) Meters (steps 16.2 and 16.4) indicate 28 volts dc. (b) EMERGENCY light (red) comes on. (c) OPERATIONAL POWER light goes off.
17.1	Connect a d-c voltmeter across pins C(+) and X(-) of P1C1. (Remove meter after checking observation).	(a) Meter indicates 28 volts dc.
17.2	Connect a d-c voltmeter across pins C(+) and X(-) of P1C1. (Remove meter after checking observation).	(a) Meter indicates 28 volts dc.
18.0	Connect a d-c voltmeter across pin m of P1C5 and a negative (-) 28 volt terminal. (Maintain this connection through step 18.4).	(a) Meter indicates zero volts.
18.1	Apply (+) 28 volts dc to pin v of P1C5. (Maintain voltage through step 18.4).	(a) Meter indicates 28 volts dc.
18.2	Connect a d-c voltmeter across pin j of P1C5 and a negative (-)28 volt terminal. (Maintain this connection during the following step).	(a) Meter indicates zero volts.
18.3	Throw the PRE-VALVE switch to the open position. (Release switch after checking observations).	(a) Meter (step 18.0) indicates zero volts. (b) Meter (step 18.2) indicates 28 volts dc.

	OPERATION	OBSERVATION
18.4	Throw the PRE-VALVE switch to the close position. (Release switch after checking observation).	(a) Meter (step 18.0) indicates 28 volts dc.
18.5	Press the EMERGENCY-RESET button.	(a) EMERGENCY light (red) goes off.
		(b) OPERATIONAL POWER light (green) comes on.
18.6	Apply (+)28 volts dc to pin B of P105. (Remove voltage after checking observation).	(a) BOOSTER PRE-VALVE OPEN light (green) comes on. (Light goes off).
18.7	Apply (+)28 volts dc to pin C of P105. (Remove voltage after checking observation).	(a) BOOSTER PRE-VALVE CLOSE light (amber) comes on. (Light goes off).
18.8	Apply (+)28 volts dc to pin D of P105. (Remove voltage after checking observation).	(a) SUSTAINER PRE-VALVE OPEN light (green) comes on. (Light goes off).
18.9	Apply (+)28 volts dc to pin E of P105. (Remove voltage after checking observation).	(a) SUSTAINER PRE-VALVE CLOSE light (amber) comes on. (Light goes off).
19.0	Apply (+)28 volts dc to pin f of P102. (Remove voltage after checking observation).	(a) FUEL TANK 90% FULL light (green) comes on. (Light goes off).
19.1	Apply (+)volts dc to pin e of P102. (Remove voltage after checking observation).	(a) FULL TANK 95% FULL light (amber) comes on. (Light goes off).
19.2	Apply (+)28 volts dc to pin X of P102. (Remove voltage after checking observation).	(a) FULL TANK 100% FULL light (green) comes on. (Light goes off).
19.3	Apply +28 volts dc to pin W of P102. (Remove voltage after checking observation).	(a) FULL TANK OVERFILL light (red) comes on. (Light goes off).

Satisfactory completion of the above procedure indicates the electrical control system for the Fuel Tanking Control Panel is valid. When no further testing is required return all switches to their off, closed, or normal position, and reconnect wiring and replace plugs that were removed during system preparations for test (paragraph 3-2). This returns the system to its normal secured state.

TEST DATA SHEET

Electrical System of _____ Version No. _____
_____ Location _____
T.O. Drawing No. _____ Inspected By _____
Major Components Serial No.'s _____ Date Inspected _____
_____ Inspector Approved By _____
_____

Step No.	Validation Performed	Insp. Stamp
1.	Console Power -	DISCONNECTED
2.	Pre-Power Circuits Check - - - - - - - - - - - - - -	SATISFACTORY
3.	Panel Indicator Lights - - - - - - - - - - - - - - -	SATISFACTORY
4.	Pressurization - Vent Valve Circuits - - - - - - - -	SATISFACTORY
5.	Test and Operational Power Circuits - - - - - - - -	SATISFACTORY
6.	Acoustica Control Unit and Fuel Flow Totalizer- -	SATISFACTORY
7.	Storage Tank Pressure Meter - - - - - - - - - - - -	SATISFACTORY
8.	Pump Inlet Valve Circuits - - - - - - - - - - - - -	SATISFACTORY
9.	Pump FB Main Flow Valve Circuits - - - - - - - - -	SATISFACTORY
10.	Pump FB Restricted Flow Valve Circuits- - - - - -	SATISFACTORY
11.	Pump Outlet Valve Circuits- - - - - - - - - - - - -	SATISFACTORY
12.	Gravity Return Valve Circuits - - - - - - - - - - -	SATISFACTORY
13.	Pump Return Valve Circuits- - - - - - - - - - - - -	SATISFACTORY
14.	Bleed Valve Circuits- - - - - - - - - - - - - - - -	SATISFACTORY
15.	Pump FA and Pump FB Circuits- - - - - - - - - - - -	SATISFACTORY
16.	Fill and Drain Valve Circuits - - - - - - - - - - -	SATISFACTORY
17.	Emergency Circuit - - - - - - - - - - - - - - - - -	SATISFACTORY
18.	Pre-Valve Circuits - - - - - - - - - - - - - - - - -	SATISFACTORY
19.	Missile Fuel Tank Indicator Light Circuits- - - - -	SATISFACTORY